

**DIESEL SIP WORKGROUP  
SUMMARY OF CONTROL MEASURES DISCUSSED 9-26-2005  
NONROAD PORT, RAIL & AIRPORT**

Criteria for evaluating each measure:

Environmental Benefits  
Technical Feasibility  
Economic Feasibility  
Implementation Feasibility  
Societal Benefits/Env Justice  
Enforceability

<b>DESCRIPTION OF STRATEGY</b>	<b>PROS</b>	<b>CONS</b>
*Voluntary speed reduction (ships)	Voluntary, little if any cost.	Difficult to enforce. Speed already limited in NJ Ports due to high amount of ship traffic and the ships having to negotiate through the Arthur Kill and Kill Van Kull. California requires speed reduction in ocean channels, not harbor. Prevailing wind is away from land so env benefit to NJ is questionable.
**Cold ironing (long term solution)	Reduction in regional and local emissions may be significant. Appropriate for dedicated vessels. The Port Authority is examining whether to do a study with Starcrest Consulting to determine the percent of air emissions contributed by vessels at berth at Port Authority facilities compared to harbor wide marine-related emissions and overall emissions within the non-attainment area.	High cost due to changes on both ships and docks. No IMO standard for electrification/power
**Incentives to use alternative fuels (low sulfur or ULSD)	Some port authority tenants are already using low sulfur for yard handling equipment. Ship fuel comes from local refinery. International agreements are being worked out to reduce the sulfur in the ship fuel (MARPOL Annex 6. Some West Coast terminal operators are using ULSD for their cargo handling equipment.	Not all ships fuel in port. Ships typically use the highest sulfur, least expensive fuel available (bunker fuel) so not sure if they can use ULSD without technical modifications/problems?
**Hybrid engines (diesel electric)	May be efficient and cost-effective to use battery power for tugs. Lower fuel cost.	High purchase price, potential horsepower penalty. High cost for battery replacement
*Engine retrofits for ferries (SCR, DOCs, DPFs)	SCR is a Nox strategy that was used on NY's Alice Austen ferry as an offset for emissions projected from dredging project. DOCs and DPFs used in LA for nonroad cargo handling equipment.	SCR not verified and equipment takes up a lot of storage space. SCR not effective unless engine reaches a high enough temperature. NYSERDA is currently evaluating DOCs and DPFs for diesel emission reductions on the

		NY/NJ private ferry fleet.
***Scrap old yard equipment and replace with newer models equipped with on-road engines	Cost-effective; is being done voluntarily by Port Authority tenants coincident with their business cycle; dramatic reduction in emissions; can be targetted in EJ communities. Emission fees may generate funding source & provide incentive to modernize more quickly to reduce emissions.	Cost differential between old non-road engine and new on-road engine. A voluntary program would need to provide sufficient financial incentive to offset cost of newer, more expensive machine ahead of business cycle. Grants don't coincide with business cycle so vehicle owners would prefer tax write-offs.
** Extended gate hours at port	Reduces congestion/idling, high rate of adoption in LA due to surcharge during peak hours (Pier Pass). Some terminals at PA NY/NJ are already doing this voluntarily. DOT & EPA workgroup are already studying this option.	Teamster raised this as an issue at LA because independent truckers would not receive additional pay for working off-hours and might violate new hours of service rules. Warehouses would have to adjust hours to accept off-peak deliveries. Additional costs to staff ports and warehouses. Time shift may conflict with local ordinances for noise and traffic.
***Electronic gate and scheduling	Has the potential to improve port efficiency (Port of Georgia is saving 3000 gallons of fuel per day due to gate efficiencies including mandatory appts.); improves security; reduces idling time.	Capital costs high, limited land available
***Crane electrification	Already underway, cost-effective for business as well as emission reduction	High cost of infrastructure and cost differential for electric crane and supporting infrastructure compared to diesel.
**Shared chassis pools/centralized locations	Done in Va, Hampton Roads port. Reduced turnaround times, improved safety, reduced idling	Requires cooperation among different businesses. Different carriers provide different chassis. Requires good management so no additional drive times for truckers to retrieve chassis. May be difficult for a landlord port, such as the Port Authority of NY/NJ.
**Provide incentives to repower tugs.	Port Authority is repowering tugboats with modern, cleaner burning diesel engines (not hybrid) as an offset for emissions during the harbor dredging project.	High capital cost. Repowered tugs are required to operate within the non-attainment area and therefore can't be moved to another location.
**Provide incentive for cleaner fuel (ULSD required beginning 2012) for trains.	PM benefit, use enables retrofits Localized, urban benefits	Limited legal authority to require; need incentives or funding otherwise cost will shift to riders.
*** Require that all freight or passenger locomotives parked for more than minimum hours in NJ use an idling alternative (i.e., plug in, on-board APU, gensets, or fuel fired heaters).	Technologies are commercially available and loco owner could choose one that best suits their needs. Fuel savings and engine wear savings. Idling limit would be easy to enforce.	Need behavioral changes (many new engines can be shut off in cold weather but drivers don't realize). Switch locos need to go at a moments notice so may be not conducive to APUs or Kim Hotstart device (\$10,000 each). Question on legal authority although some states are enforcing and haven't been

		challenged.
**Idling reduction for ferries through use of "strong arm docker"	Would allow ferry vessel to dock with engines at idle instead of under power. May be short payback period.	High initial capital cost. Hasn't been tested yet, but NYSERDA is exploring.
***Incentives for green goat or similar hybrid locomotives	Voluntary, large PM reductions, good power, proven technology.	Single supplier (Green Goat) with production issues. NJT had concerns with quality of subcontractor's work/materials. Currently, technology is restricted to "Switcher or Yard Engines"; cannot yet be used in long haul applications. Port Authority states it's not powerful enough for all switcher operations.
*Short haul barging of materials/containers to satellite locations. (Port of NY/NJ currently barging containers up Hudson to Albany on a trial basis)	Reduction in traffic due to containers being transported by barge instead of truck.	Long term solution, need partners, not necessarily faster than truck, but more efficient on a container-per-vessel move.
**Continued electrification of passenger rail lines	Within control of NJ Transit/state. Will it provide improved service? PM reduction. Gives more people access to Manhattan because only electric trains go there.	High cost. Only installed now where ridership is high enough to be cost-effective
***Scrappage program to replace or upgrade old locomotives.	NJT's fleet is from the 1960s and thus exempt from EPA standards, but they rebuild every 6-8 years. \$5 million for new one, but <\$200,000 to bring to Tier 0 standards. New ones are Tier 2 compliant.	
*** Dual mode locomotives	More cost effective than electrifying the lines.	
*Periodic opacity inspections of locomotives (similar to onroad inspections). Feds mandate safety, but not emissions, inspection every 92 days.	Increase in fuel efficiency due to optimal engine operation. Penalties can be used to fund a PM reduction program specific to railroads.	High cost to implement an inspection program. May conflict with federal regulations that cover railroads. May need to take engine off-site to test.
**Congestion management for freight rail: upgrading track to raise speed limits, grade separating road and rail, etc.	Significant reduction in locomotive and other vehicle idling. (S. California's Alameda corridor project is good example.)	Expensive? NIMBY concerns regarding increasing freight capacity therefore need to minimize impact on community.
***Electrify (or use rechargeable batteries) on airport ground support equipment, possibly through lease incentives.	An electrification program has been or is being performed at the Dallas/Ft. Worth Airport. PM reduction. Funding available under federal energy bill.	Portability limitations. Cost. Do we have authority currently or do we need new legislation?
**Provide incentives for alternative fuels, low sulfur fuels and retrofits on airport ground support equipment which has 12 year	PM reduction; fuel savings.	Cost to retrofit. Technology may not be proven in this application. Do we have authority currently or do we need new legislation?

turnover.		
**Idling restrictions for airport ground support equipment.	PM reduction, fuel savings, reduction in engine wear. Low cost.	Difficult to enforce. May not be practical in harsh weather conditions. There may be operational concerns where some equipment may have to constantly run.
*Cap and trade on airport emissions. "bubble concept"	Would potentially reduce concentrated emissions in high PM/non-attainment areas.	Reductions in PM emissions may be minor to non-existent on a large scale. Emissions are just being moved from one area to another.
**Charge fees to airplanes based on their emissions (i.e., differential landing fees)	Financial incentive to upgrade the current aircraft fleet to newer, fuel efficient, less PM emission aircraft.	Expense of enforcement. May conflict with current FAA rules. The Port Authority's (landlord) rules and fees must be approved by FAA.
**Make efficiency improvements/upgrading a part of the airline or airport lease agreement.	Fuel saving/PM savings. Long term cost savings. Leases are typically 20 years.	Possible legal ramifications associated with these lease conditions. Maybe objectionable to airlines due to increased costs.

\*Less promising strategy

\*\*Promising strategy

\*\*\* Most promising strategy